CHAPTER 11:
ENERGY AND SUSTAINABILITY ELEMENT

Photo by Dave Battey, Snoqualmie Valley Historical Museum

A. INTRODUCTION

The City of North Bend has an incredible setting. The rugged backdrop of Mt. Si, the green forested slopes of Rattlesnake Mountain, the wide open fields of Meadowbrook and Tollgate Farms, and the clear flowing mountain waters of the South Fork and Middle Fork Snoqualmie Rivers form our community's character and unique identity, while enhancing its vitality. The desire to pass these resources to our future generations is at the center of the idea of sustainability.

The North Bend Energy and Sustainability Element provides incentive-based policy direction for municipal operations, new development, and outreach to the community to promote the balance of environmental, community, and economic goals for the long term health and prosperity of the City and its future residents. The policies of this Element are additionally intended to support greenhouse gas emissions reductions which enable the City to compete effectively for important sources of grant and loan funding that favor such factors.

Other Elements of this Comprehensive Plan contain objectives and policies that address additional measures of sustainability. These include:

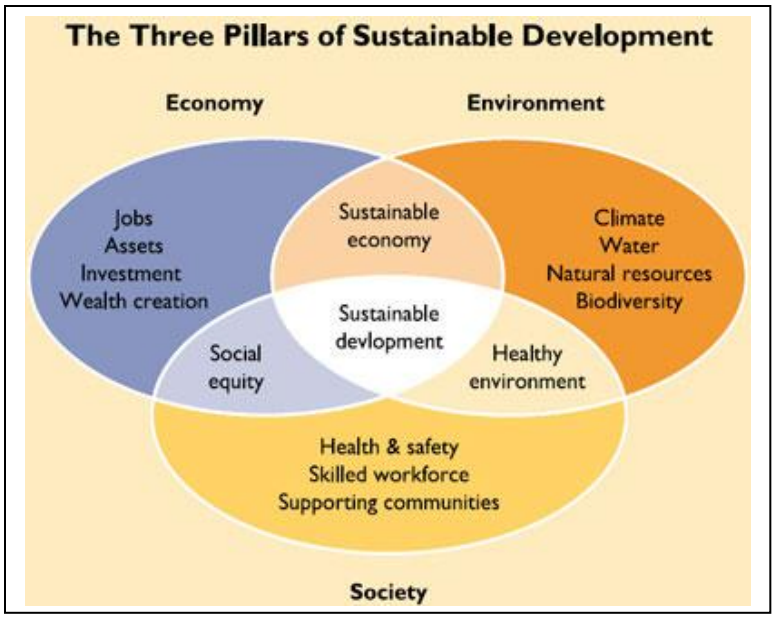
- ***Critical Areas Element*** – addressing the protection of our physical environment, including wetlands, streams, wildlife habitat, and air and water quality.
- ***Transportation Element*** – addressing impacts of vehicular mobility on multiple social and environmental factors.
- ***Land Use Element*** – addressing creating compact mixed-use, walkable communities with an appropriate jobs/housing balance.

A.1 What is Sustainability?

Sustainability is widely recognized by the following definition:

"Sustainability is the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs."[1]

The concept of sustainability describes a condition in which human use of natural resources, required for the continuation of life, is in balance with nature's ability to replenish them. This concept also extends to economics, as financial decisions must consider balance and the ability to replenish or demonstrate the appropriate payback of expenditures in a timely effective manner. More recently, sustainability has been further expanded to recognize the interdependence of three primary factors or pillars - that of economic vitality, social equity, and environmental quality. A project or action can be considered sustainable when it achieves a balance of these three pillars. When a community maintains a balance of these interdependent pillars, the long-term result is prosperity for the current population and prosperity for its future generations.



A.2 Why is Sustainability Important to North Bend?

Addressing factors of sustainability is necessary for the environmental, economic, and social well-being of North Bend's current and future generations. By proactively addressing issues of sustainability, the City of North Bend gains the opportunity to:

i. Resolve issues prior to adverse impacts becoming more costly and difficult;
ii. Effect positive change through incentive-based policies;
iii. Compete effectively against other communities for State and Federal grant funds;
iv. Provide efficient and cost effective government decision making for citizens and tax payers.
v. Proactively address energy and sustainability-related issues rather than reacting to future legislation, allowing the City to drive its destiny.

[1] Definition created by the Brundtland Commission, established by the UN in 1983 to consider the impacts of environmental degradation on the human environment, natural resources, and economic and social development.

A.3 Proactively Responding to Legislative Requirements

Measures of sustainability are regularly addressed by the Washington State Legislature. The following are some of the more significant sustainability-related state requirements passed in the last few years.

Green Building Requirements for State-Funded Buildings

During the 2005 legislative session, Washington State passed the country's first law requiring that all new buildings and renovation projects of state public agencies and school districts that receive state funding be built to one of three green building standards (Chapter 39.35D RCW). Projects that receive funds from the state capital budget must achieve at least the Leadership in Energy and Environmental Design (LEED) Silver standard.

Electric and Biofuel Vehicle Operations Requirements

In 2009, the legislature enacted RCW 43.19.648, which requires that by June 1, 2018, local governments must satisfy 100% of their fuel usage for operating publicly owned vehicles and construction equipment from electricity or biofuel, to the extent determined practicable by rules to be adopted by the Department of Commerce by June 1, 2015. While these rules have yet to be clarified and there is likely to be a phase-in period, the City should consider this regulation when replacing and acquiring new vehicles.

Statewide Greenhouse Gas Reduction Goals

The Washington State Legislature in 2009 passed statewide greenhouse gas reduction limits, codified as RCW 70.235.020. These goals include reduction of statewide greenhouse gas emissions to 1990 levels and a reduction in vehicle miles traveled by 18% by 2020 (and further reductions by 2035 and 2050), require the Department of Ecology to inventory and track greenhouse gas emissions state-wide, and require industries of a certain size to report greenhouse gasses to the Department of Ecology. While not directed at Cities, municipal operations, land use planning, and local transportation decisions will play a strong role in achieving these limits.

Local Greenhouse Gas Reduction Goals

Starting in 2010, RCW 70.235.070 requires that all state agencies providing competitive grants for economic development and infrastructure must consider whether cities receiving state capital funds have adopted policies to reduce greenhouse gas emissions. This is perhaps the most impactful legislative action for our local government funding as it represents a significant amount of grant and loan funding to the City, including such sources as the Public Works Trust Fund (transportation and infrastructure grants and loans), and competitive grants from the Department of Ecology (environmental policy grants), Department of Commerce (land use policy and economic development grants), and Washington State Recreation and Conservation Office (Park and trail grants), among others. Having goals and policies in place to address greenhouse gas reduction will help ensure that the City is positioned for a primary source of funding opportunities for local projects.

B. SUSTAINABILITY AND PROPERTY RIGHTS

Sustainability involves striking a balance between protecting individual and public interests. In the case of this Energy and Sustainability Element, the focus is on creating incentives rather than regulations, and providing the public with information for wise decision making, rather than mandates for code compliance.

ES Goal 1: In city operations and in the development of policies and regulations, ensure an appropriate balance between individual property rights and the public interest.

ES 1.1 Wherever possible, foster wise and sustainable land use decisions in the community through incentives rather than regulations.

ES 1.2 Regularly seek to streamline permit and approval processes and remove regulations that are no longer applicable.

C. EDUCATION AND OUTREACH

Education is a core purpose of this element and a key to achieving sustainability goals. Education should occur through cost effective methods to tax payers, such as the City website, use of existing Boards and Commissions, and partnerships with other governmental agencies, schools and community groups. Education and outreach should include:

- City employees –To reduce municipal operating costs; to utilize economies of scale between city departments with regard to city resources; to learn methods of doing business in ways that are both economically wise and environmentally sound.
- City officials – To develop awareness of strategies for sustainable municipal operations and programs; to gain support and understanding of the latest techniques and methods
- Residents - To raise awareness regarding personal and collective sustainability actions individuals can take on their own; to gain support and understanding of the techniques and methods being proposed and applied

Partnering with other governmental agencies, schools, community groups and utility providers will ultimately conserve money while promoting participation in sustainability throughout the community.

ES Goal 2: Increase individual and public awareness of, and participation in, efforts to foster greater sustainability.

Policies:

ES 2.1 Help to recognize and make transparent the ecological and economic impacts of City land use, transportation and budget decisions.

ES 2.2 Help direct people to resources available from other agencies, utility providers and organizations that address issues of sustainability.

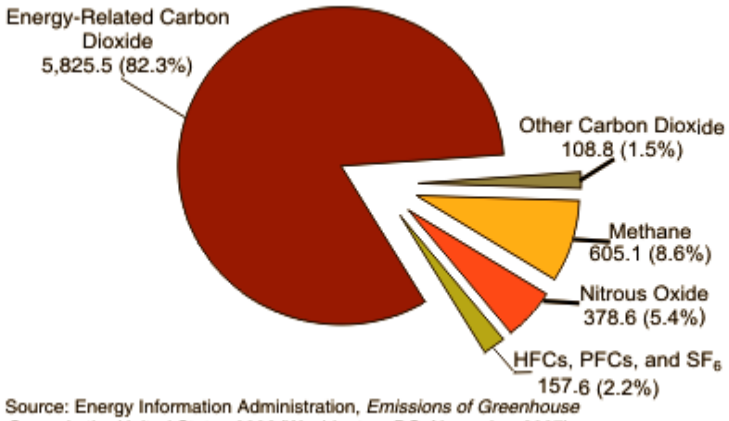
ES 2.3 Maintain a sustainability page on the City's website identifying measures the City is taking to reduce costs, increase services, reduce greenhouse gas emissions, energy and resource consumption, and other environmental impacts, and ways that residents can further reduce their own impacts.

ES 2.4 Encourage local organizations, community groups, and businesses to organize events and activities that incorporate sustainable measures.

ES 2.5 Publicize and recognize the accomplishments of the City's and community's sustainability efforts.

D. GREENHOUSE GAS EMISSIONS REDUCTION

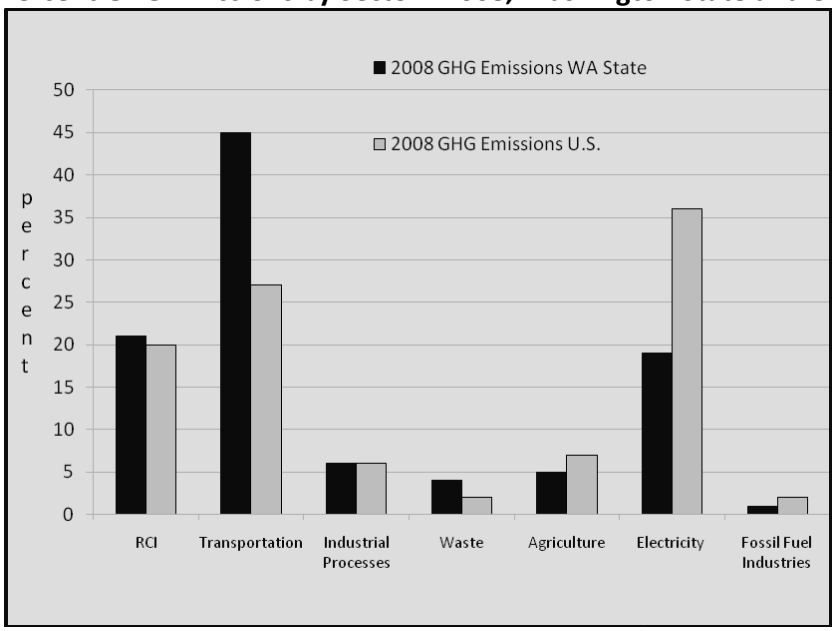
Greenhouse gases are substances that contribute to warming of the climate by trapping heat in the atmosphere. Carbon dioxide is the most dominant greenhouse gas; however a number of other gases also contribute significantly to climate change, including methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrochlorofluorocarbons (HFCs) and perfluorocarbons (PFCs). Greenhouse gasses are emitted from both natural sources and anthropogenic (human activity related) sources, but it is the emissions from anthropogenic sources contributing to global warming which we have the ability to address.



Source: Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2006* (Washington, DC, November 2007)

Statewide, transportation is the largest share of greenhouse gas emissions, followed by use of fuels to heat residential, commercial and industrial buildings (RCI), as depicted in the chart below (Washington's transportation emissions percentage is skewed above the national average due to the generation of most electricity in our state from hydropower sources, which does not contribute to greenhouse gas emissions. Electricity generation is typically the largest source of greenhouse gas emissions.). These percentages are likely to be similar within the City of North Bend.

Percent GHG Emissions by Sector - 2008, Washington State and U.S.



Source: *Washington State Greenhouse Gas Emissions Inventory, 1990-2008,* Department of Ecology Pub. 10-02-046, December 2010

Actions related to the reduction of greenhouse gas emissions are found throughout this ***Energy and Sustainability Element***, as well as in the ***Land Use Element*** and ***Transportation Element*** of the Comprehensive Plan.

E. SUSTAINABLE ECONOMY

E.1 Local Economy and Environmental Quality

With significant natural attractions surrounding the City of North Bend and a local economy supported by tourism, it is particularly important to recognize the interrelationship between a healthy environment and healthy economy. Supporting local economic growth in a manner that complements the natural environment is a key to maintaining sustainability. Likewise, supporting job growth improves overall sustainability by improving the City's jobs/housing balance, which is currently off-balance by way of far more residences than local jobs. Additional policies and direction for supporting economic development are found in the ***Economic Development Element***.

ES Goal 4: Foster a vibrant, balanced, and resilient local economy that supports local production of sustainable goods and services.

Policies:

ES 4.1 Where possible, support local businesses when awarding municipal contracts and in purchasing supplies and equipment for municipal operations, unless the cost of the product or service offered locally outweighs the benefits of buying local.

ES 4.2 Foster local job creation to improve the City's jobs/housing balance.

ES 4.3 Promote economic development strategies that capitalize on the characteristics of the property, resources, and labor available to the North Bend community, and additional industries compatible with North Bend's scenic and recreational environment.

ES 4.4 Support the farmers market as a means to promote local food production and local economic development generation.

ES 4.5 Support the use of suitable public lands (such as repetetive loss floodplain buyout lots) and underutilized private lands for local food production.

ES 4.6 Encourage community pea patch gardens and their stewardship and management by local residents and community groups.

E.2 Economic Values of Government Sustainability
Resources and measures to address sustainability need to be practical and achievable.

ES Goal 5: Ensure careful stewardship of the City's finances and resources in pursuing sustainability in City operations.

Policies:

ES 5.1 Utilize measures of sustainability that bring the greatest cost benefit ratio, or "bang for the buck."

ES 5.2 In choosing materials or equipment for municipal operations, consider long-term operational costs over short term capital expenditures.

ES 5.3 Maintain existing municipal equipment and facilities in optimal condition to reduce the need for costly repairs or replacement.

ES 5.4 Consider the purchase of used rather than new vehicles and equipment that otherwise meet energy and resource conservation objectives.

F. ELECTRICAL ENERGY CONSUMPTION, CONSERVATION AND LOCAL GENERATION
The City's role in electricity conservation comes through monitoring and reducing consumption in its own operations, and in establishing incentives applicable to new development for constructing buildings utilizing energy efficient practices and materials.

ES Goal 6: Reduce energy consumption and encourage energy efficiency and conservation in City operations and in the community.

F.1 Municipal Operations

Municipal buildings, equipment, and infrastructure (including pump stations, street lights, and wastewater operations) collectively use a significant amount of electricity. Because of all the energy uses a City is responsible for, conservation measures can provide substantial cost savings to taxpayers and reduced greenhouse gas emissions and other environmental impacts.

For many cities, street lighting is the largest fixed annual general-fund expense. By replacing 21,000 conventional streetlight bulbs with LEDs, Seattle reduced its streetlight bill by 50%, saving the City more than 1.2 million annually.

Boston Globe, Aug. 2, 2012

Policies:

ES 6.1 Foster energy conservation practices among City employees.

ES 6.2 Make energy efficiency a priority in City operations and facilities, retrofitting city facilities with energy efficient lighting and equipment as practical. Participate in rebate and incentive programs from Puget Sound Energy and others to offset the costs of retrofits.

ES 6.3 Where practical, conduct energy audits of existing municipal buildings to identify high-priority retrofits and repairs for increasing energy efficiency and cost savings.

ES 6.4 When installing new or retrofitting existing street and public area lighting, select fixtures and bulbs that minimize energy use and prevent over-lighting.

ES 6.5 Evaluate the selection of US EPA Energy Star certified equipment and appliances when purchased for City use, and make such selection when the business case justifies the cost.

F.2 New Development and Community Energy Use

Electricity in the City of North Bend is provided by Puget Sound Energy and the Tanner Electric Cooperative, both of which have programs to promote energy conservation by their customers. The City can additionally influence energy use in the community by providing incentives for providing energy efficient materials and construction, and by enabling the development of private local generation projects, such as solar arrays and wind turbines on buildings.

Policies:

ES 6.7 Provide incentives for energy efficiency in new development, including Energy Star certified homes, buildings and plants.

ES 6.8 Encourage opportunities for local energy generation, including the installation of local solar and wind facilities. Evaluate potential sites and partnerships with other

agencies, such as the school district, parks district, King County and other agencies with land and facilities that could accommodate local energy generation facilities.

ES 6.9 Review and revise building and development codes, design guidelines, and zoning ordinances to remove barriers to the installation of local-site energy generation facilities.

G. FOSSIL FUEL CONSUMPTION

The global environmental impacts of extracting, processing and burning of fossil fuels are numerous, including significant habitat destruction, air and water pollution, and greenhouse gas emissions. The City can implement strategies designed to reduce the City's fossil fuel consumption, ultimately saving money and improving air quality. One strategy is by addressing RCW 43.19.648, by planning for and transitioning the City's fleet as vehicles reach the end of their practical life.

Burning a gallon of gasoline emits almost 20 pounds of carbon dioxide. A typical late-model, mid-sized sedan produces about 9,500 pounds of carbon dioxide each year, while a hybrid car generates less than half that, about 4,300 pounds.

Environmental Protection Agency

Another strategy is through establishing densities and land use design that supports the use of public transit, encourages walking and bicycling, and other alternatives to single-occupant vehicle trips. This can be done by providing complete streets (interconnected streets with sidewalks and bicycle lanes) and pedestrian pathway networks. These issues are addressed through the ***Land Use Element*** and ***Transportation Element*** of the Comprehensive Plan.

ES Goal 7: Optimize the efficiency of fossil fuel use in City operations and encourage measures in the community which reduce fuel use and emissions.

Policies:

ES 7.1 Increase the fuel efficiency of the City's vehicle fleet and implement a policy to consider "right-sizing" for the right application in vehicle purchase decisions.

ES 7.2 Consider alternative work schedules to reduce employee commutes, i.e. telecommuting and flex-time schedule when appropriate.

ES 7.3 Implement a no-idling policy with all City vehicles.

ES 7.4 Educate the public about the benefits of not idling vehicles.

ES 7.5 Limit idling in certain circumstances and locations.

ES 7.6 Support the installation electric vehicle charging infrastructure by the private market.

H. WATER CONSERVATION

The City of North Bend impacts water use both through its own operations and through public use of water from the City's service area and the Sallal Water Association, which also serves

portions of North Bend. Reducing municipal and public water use not only benefits in-stream flows, it benefits the financial bottom line, as treating and pumping domestic water and wastewater is one of the most energy intensive municipal operations. The less water that residents use, the more energy the City can save. Water consumption and conservation is addressed in Chapter 5 of the City's ***2010 Water System Plan***, which provides a Water Use Efficiency Program and includes a section on water conservation measures.

I. GREEN BUILDING

The efficiency and environmental impacts of building materials and practices can have a substantial impact on energy, water and resource consumption, as well as human health. A number of third-party independent certifying organizations have developed standards that measure the efficiency and environmental impacts of building construction, the two most common of which include the US Green Building Council's *Leadership in Energy and Environmental Design* (LEED) program, used for commercial and residential buildings, and the *Built Green* program, which focuses principally on residential construction.

Both LEED and Built Green are point-based ratings systems that address energy, water and resource conservation, indoor air quality, site sustainability, and use of sustainable building materials.

The most efficient way that the City can foster sustainable building practices is by encouraging participation by developers in these existing certification programs, and participating directly in these programs in the construction of public buildings.

ES Goal 8: Encourage the construction of green buildings in the public and private sectors.

Policies:

ES 8.1 Utilize green building techniques and measures in municipal projects when the economics of a project demonstrate appropriate payback on investment.

ES 8.2 Provide incentives to the private sector for the development of green and energy efficient buildings, utilizing programs such as Built Green, Leadership in Energy and Environmental Design (LEED), Energy Star, or equivalent. Incentives can include awards or recognition, expedited review, reduced permitting costs or impact fees, density bonuses, or other measures as appropriate.

ES 8.3 Identify and remove regulatory or procedural barriers to implementing green building practices, such as updating codes, guidelines, and zoning, and ensure that plan review and building inspection staff are trained in green building materials, practices, and techniques as appropriate.

J. RESOURCE CONSUMPTION

The City uses a considerable amount of resources in its day-to-day operations, through the purchase of supplies and equipment, and in cleaning and maintaining its facilities. The City can take a number of simple measures that reduce resource consumption and waste through environmentally preferable purchasing. Environmentally preferable purchasing is the procurement of goods and services that have lower negative impacts on the environment and human health compared with conventional products that serve the same purpose.

ES Goal 9: Reduce unnecessary and/or unwarranted consumption to minimize the cost of City operations, and the environmental and human health impacts of the resources used in City operations.

Policies:

ES 9.1 Develop an environmentally-preferable purchasing strategy for municipal equipment, vehicles, office supplies, and other products purchased by the City, that considers durability, environmental and carbon footprint, local sourcing, waste reduction, and minimization of toxic and hazardous substances, and weighs the cost benefit in those purchasing decisions. Support environmentally-preferable purchases when the cost is equivalent to the conventional alternative.

ES 9.2 Purchase recycled, reused or refurbished supplies, equipment and vehicles for City departments where appropriate.

ES 9.3 Substitute, reduce, and where possible, eliminate the use of toxic materials in municipal operations, such as synthetic fertilizers, pesticides, preservatives, solvents, and other materials that have negative environmental and human health impacts.

ES 9.4 Whenever possible, extend the useful life of products and buildings through repairs and remodels rather than replacement.

ES 9.5 Give priority to implementing actions that save both costs and resources. For example, provide pitchers of tap water rather than bottled water for City meetings and functions.

ES 9.6 Reduce the City's use of paper by using double-sided printing where appropriate.

ES 9.7 Consider implementing paperless City Council meetings.

K. WASTE REDUCTION AND RECYCLING

In 1985, recycling 25% of overall waste was considered the maximum level feasible. By 2008, Washington State residents recycled or diverted an average of 47.5% of all solid waste (Washington State Department of Ecology), and there is still significant opportunity to increase well beyond this rate. Waste *reduction* is perhaps an even more important goal – reducing the

amount of waste generated in the first place. Both the City and its residents have roles to play in the well-known mantra, "reduce, re-use, recycle."

ES Goal 10: Reduce waste and increase recycling and waste diversion in City operations and in the community.

K.1 Municipal Operations

City operations involving solid waste collection and recycling includes secure shredding and recycling of office waste paper, regular recycling of other materials and waste disposal from office use, and garbage and recycling collection at parks and during special events. The City does not currently offer recycling at public parks, which represents an opportunity for community participation in recycling, and a focus for future improvement.

Policies:

ES 10.1 Reduce waste production and increase recycling and waste diversion in City operations, in public parks, and other public places.

ES 10.2 Place recycling containers adjacent to garbage containers in all areas where public waste receptacles are provided. Ensure that recycling containers are clearly indicated for recycling purposes only, to discourage disposal and mingling of trash with recyclables.

ES 10.3 Develop operating procedures to ensure that outdoor recycling pickup and management at City parks and other public spaces is time and resource efficient for City personnel.

ES 10.4 Provide recycling and food waste composting bins at public events and festivals.

K.2 Community Waste Reduction and Recycling

The City of North Bend provides its residents and businesses with solid waste and recycling services through a contract with a waste management service provider. The City can influence resident participation in waste reduction and recycling through outreach and education, and by ensuring that its solid waste contracts include full recycling services, including recycling of yard and food waste.

Recycling just one aluminum can saves enough energy to run a TV for three hours -- or the equivalent of a half a gallon of gasoline.

Recycling-revoloution.com

Policies:

ES 10.5 Reduce waste production and increase recycling rates in the community.

ES 10.6 Ensure that solid waste contracts provide complete and convenient opportunities for resident participation and education in recycling and waste diversion, including curbside pickup of comingled recycling and food and yard waste recycling. Ensure

that these services are available to single and multi-family homeowners, apartment residents, and businesses alike.

ES 10.7 Provide for hazardous waste collection, to ensure proper recycling or disposal of materials not suitable for curbside pickup.

ES 10.8 Incentivize building moving and building deconstruction and material re-use rather than building demolition when practical.

L. SUSTAINABLE MOBILITY

In Washington State, transportation accounts for 45% of all greenhouse gas emissions (Greenhouse Gas Emissions Inventory, Department of Ecology, 2010). Municipalities have a strong role to play in reducing transportation-related greenhouse gas emissions and addressing health-related transportation issues, as the built environment influences how far and by what mode people will travel on a daily basis. Goals and policies addressing the relationships between transportation and multiple measures of sustainability are found within the ***Transportation Element***. Goals and policies addressing the overall densities and development patterns of the City that foster walking, bicycling and transit use, as well as policies addressing the jobs/housing balance to reduce regional commuting, are found in the ***Land Use Element***.

M. EQUITY

Municipal government and land use decisions are made with consideration of input from the public as provided through the public process. It is very important for the overall balance of sustainability to ensure that all voices are heard or represented through local government. Issues of equity that can be addressed by a City include equitable public input and decision making, ensuring community facilities and infrastructure address the needs of all ages and abilities, and geographic and economic equity in locating community facilities. Additional issues of equity involve housing affordability and the provision of affordable housing, which are addressed in the goals and policies of the ***Housing Element***.

ES Goal 11: Develop a robust out-reach program to all populations to build trust and strengthen relationships between the City and its residents, and ensure that municipal actions are transparent, equitable, and just.

Policies:

ES 11.1 In outreach and education activities, and in the public process for land use decision making, strive to reach out to underrepresented populations, including youth, minorities, people with disabilities, and people that are poor, and encourage their participation.

ES 11.2 In land use decision making, ensure that the City takes into consideration the interests of underrepresented populations, even when their voices are not heard at the table.

ES 11.3 Partner with the Snoqualmie Valley School District and youth organizations on projects that provide opportunities for youth participation in public decision making and volunteerism, and as a means to provide community outreach and education.

ES 11.4 Provide opportunities for members of city boards and commissions to share and confer on cross-organizational and inter-organizational matters, to ensure informed decision making and recommendations.

ES 11.5 Continue to foster youth participation in the public process by providing a youth-position on the Parks Commission, and other boards and commissions as appropriate.

ES 11.6 Consider economic and geographic equity in locating municipal facilities that can cause negative or positive impacts on the surrounding neighborhood, such as parks, road improvements, wastewater treatment, and utility stations.

ES 11.7 Partner with educational, governmental and community organizations to encourage community access to information and education. Examples include the Snoqualmie Valley School District, King County Library System, Encompass, the North Bend Food Bank, and the Snoqualmie Valley Chamber of Commerce.

ES 11.8 Develop and encourage volunteer opportunities, community projects and events that promote community health and interaction. Examples include habitat restoration projects, community races and festivals, and the Adopt-a-Park Program.

N. URBAN FORESTRY

100 mature tree crowns intercept about 100,000 gallons of rainfall per year, reducing runoff and flooding, and providing cleaner water.

US Forest Service, Northeastern Area

In addition to providing beauty, trees play a role in a number of factors of environmental and economic sustainability, including carbon sequestration, air quality improvement, shading of both buildings and habitat, reducing erosion, uptake of stormwater, and increasing property values. The City of North Bend provides for and enhances its urban forest through the provision of street trees on all public streets, protections of existing significant trees in clearing and land development, and via landscaping requirements applicable to new development. The care and management of public trees is addressed by the City's ***Urban Forestry Plan***.

O. LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT

Low Impact Development (LID) Stormwater Management refers to the use of techniques that manage stormwater runoff through small-scale, on-site infiltration measures rather than through the construction of traditional drainage facilities such as pipes, stormwater vaults and ponds that are connected to a larger centralized point-discharge stormwater system. LID stormwater management techniques can provide cost savings to developers by reducing or eliminating the need for costly "hard" infrastructure such as pipes, vaults and ponds, which also take up valuable developable area. Using greater LID stormwater management techniques also provides cost savings to the City in minimizing downstream investments for

capacity upgrades to the City's stormwater infrastructure, extending the life and function of the current system and reducing future maintenance burdens.

ES Goal 13: Maintain infiltration to the City's aquifer and minimize stormwater runoff impacts to surfaces waters through the use of Low Impact Development stormwater management techniques.

Policies:

ES 13.1 Incentivize use of LID stormwater management techniques that minimize impervious surfaces and capture, treat, and infiltrate stormwater, including vegetated roofs, cisterns, rain gardens, and biofiltration swales, or such other techniques which may be developed and approved for application.

ES 13.2 Encourage placement of buildings, roads, sidewalks and other development to minimize the need for clearing and maximize preservation of existing native vegetation.

ES 13.3 Ensure the proper care and management of LID stormwater techniques by the City for public facilities, and by private property owners or homeowners associations responsible for these features on private property.

ES 13.4 Develop management protocol to ensure that regular "vacuuming" of pervious paving surfaces is performed to keep them from becoming clogged and losing their infiltration capacity over time.

ES 13.5 Following completion of a residential LID demonstration project consistent with the City's LID Demonstration Project Regulations, evaluate the successes and shortcomings of the development's stormwater management, and consider how the provisions may be applied City-wide.